CARDIOVASCULAR "STEMI" RECEIVING CENTERS

PURPOSE

A Cardiovascular STEMI Receiving Center (SRC) will be the preferred destination for patients who access the 9-1-1 system meeting defined criteria and show evidence of a ST-elevation myocardial infarction on a 12 Lead electrocardiogram. These patients will benefit from rapid interventions via cardiac catheterization interventions.

DEFINITIONS

1. **STEMI** - ST Elevation Myocardial Infarction
2. **PCI** - Percutanious Coronary Intervention
3. **Cardiovascular STEMI Receiving Center (SRC)** - Facilities that have emergency interventional cardiac catheterization capabilities
4. **STEMI Referring Centers** - Facilities that do not have emergency interventional cardiac catheterization capabilities
5. **CQI** - Continuous Quality Improvement
6. **EMS** - Emergency Medical Services
7. **CE** -Continuous Medical Education

POLICY

The following requirements must be met for a hospital to be designated as a Cardiovascular STEMI Receiving Center by ICEMA:

1. An ICEMA approved paramedic receiving hospital which is a full service acute care facility.
2. Licensure as a Cardiac Catheterization Laboratory.
3. Intra-aortic balloon pump capability.
4. Cardiovascular surgical services permit:
   This requirement may be waived by the EMS Agency Medical Director when appropriate for patient or system needs. The Medical Director will evaluate conformance with existing American College of Cardiology/American Heart Association or other existing professional guidelines for standards.
5. Communication system for notification of incoming STEMI patients, available twenty four (24) hours per day, seven (7) days per week. (i.e. in-house paging system)
6. Provide CE opportunities for EMS personnel in areas of 12 Lead ECG acquisition and interpretation, as well as assessment and management of STEMI patients.

7. **STAFFING REQUIREMENTS**

   The hospital will have the following positions designated and filled prior to becoming a SRC:

   a. Medical Directors

      The hospital shall designate two physicians as co-directors of its SRC program. One physician shall be a board certified interventional cardiologist with active PCI privileges. The co-director shall be a board certified emergency medicine physician with active privileges to practice in the emergency department.

   b. Nursing Director

      The hospital shall designate a SRC Nursing Director who is trained or certified in Critical Care nursing.

c. On-Call Physician Consultants and Staff

A daily roster of the following on-call physician consultants and staff that must be promptly available within thirty (30) minutes of notification.

1. Cardiologist with percutanious coronary intervention (PCI) privileges.
2. Cardiovascular Surgeon, if cardiovascular surgical services are offered.
   If cardiovascular surgical services not available in house the facility must have a rapid transfer agreement in place with a facility that provides this service. The agreement must be on file with the local EMS agency. Additionally, the facility must have a rapid transport agreement in place with a local transport agency.
3. Cardiac Catheterization Laboratory team.
4. Intra-aortic balloon pump nurse or technologist.

8. INTERNAL HOSPITAL POLICIES

The hospital shall develop internal policies for the following situations:

a. Fibrinolytic therapy protocol to be used only in unforeseen circumstances when PCI of an STEMI patient is not possible.

b. Diversion of STEMI patients **only** during times of Internal Disaster in accordance to ICEMA Diversion Policy #14051 (applies to physical plant breakdown threatening significant patient services or immediate patient safety issues i.e. bomb threat, earthquake damage, hazardous material or safety and security of the facility.) A written notification describing the event must be submitted to ICEMA within twenty four (24) hours.

c. Prompt acceptance of STEMI patients from other STEMI referral centers that do not have PCI capability.

9. DATA COLLECTION

The following data shall be collected on an on-going basis and available for review by ICEMA:

a. Total number of EMS STEMI patients transported to a designated SRC. (Source data: ICEMA approved patient care record.)

b. Total number of EMS STEMI patients that bypass the most accessible receiving hospital (not approved as a SRC) and are transported to a SRC. (Source data: base hospital logs.)

c. Total number EMS STEMI patients who received primary PCI. (Source data: STEMI center logs.)

d. Door to dilation times for primary PCI of all STEMI patients. (Source data: STEMI center logs.)

e. Total number of patients admitted with the diagnosis of myocardial infarction per year. (Source data: STEMI center logs.)

f. Total number of PCI procedures performed per year per facility. (Source data: STEMI center logs.)

10. CONTINUOUS QUALITY IMPROVEMENT PROGRAM

SRC shall develop an on-going CQI program which monitors all aspect of treatment and management of STEMI cardiac patients and identify areas needing improvement. The program must, at a minimum, monitor the following parameters:

a. Morbidity and mortality related to procedural complications.

b. Detail review of cases requiring emergent rescue CABG.

c. Tracking of door-to-dilation time and adherence to minimum performance standards set by this policy.

d. Active participation in ICEMA STEMI CQI Committee activities.

11. PERFORMANCE STANDARD

In accordance with *D2B: An Alliance for Quality* guidelines, SRCs must achieve and maintain a door-to-balloon time of less than or equal to ninety (90) minutes in 75% of primary PCI patients with STEMI. If this standard is not achieved, SRC may be required to submit an improvement plan to ICEMA addressing the deficiency with steps being taken to remedy the problems.

DESIGNATION

1. The Cardiovascular STEMI Receiving Center applicant shall be designated after satisfactory review of written documentation and an initial site survey by ICEMA or its designees and completion of an agreement between the hospital and ICEMA.
2. Documentation of current accreditation from The Society of Chest Pain Centers as "Chest Pain Center with PCI" shall be accepted in lieu of a formal site visit by ICEMA.
3. Initial designation as a SRC shall be for a period of two (2) years. Thereafter, re-designation shall occur every four (4) years, contingent upon satisfactory review.
4. Failure to comply with the criteria and performance standards outlined in this policy may result in probation, suspension or rescission of SRC designation.

PATIENT DESTINATION

1. The designated SRC should be considered as the destination of choice if all of the following criteria are met:
    a. Identified STEMI patients based on machine interpretation of field 12 Lead ECG, verified by paramedics and approved by a base hospital physician.
    b. Total transport time to the SRC is thirty (30) minutes or less. Base hospital physician may override this requirement and authorize transport to the SRC with transport time of greater than thirty (30) minutes.
    c. Base hospital contact is **mandatory** for all patients identified as possible STEMI patient. The base hospital confirms a SRC as the destination.
    d. The base hospital is the only authority that can direct a patient to a STEMI receiving center.
    e. The base hospital, if different from the SRC, will notify the SRC of patient's pending arrival as soon as possible, to allow timely activation of Cardiac Cath lab team at the SRC.

2. The following factors should be considered with regards to choice of destination for STEMI patients. Base hospital contact and consultation is mandatory in these and similar situations:
    a. Patients with unmanageable airway, unstable cardiopulmonary condition, or in cardiopulmonary arrest should be transported to the closest receiving hospital.
    b. Patients with malignant ventricular fibrillation, ventricular tachycardia, second degree type II heart block and third degree heart blocks should be considered for transport to the closest receiving hospital.
    c. Patients with obvious contraindication to thrombolytic therapy should be strongly considered for transport to the closest SRC.
    d. Patients with hemodynamic instability as exhibited by blood pressure less than 90 systolic and/or signs of inadequate tissue perfusion should be transported to the closest receiving hospital.

Approved:

SIGNATURE ON FILE

San Bernardino Co. Health Officer Date

SIGNATURE ON FILE

Inyo & Mono Co. Health Officer Date

SIGNATURE ON FILE

ICEMA Medical Director Date

SIGNATURE ON FILE

ICEMA Executive Director Date

12 LEAD ELECTROCARDIOGRAPHY

FIELD ASSESSMENT/TREATMENT INDICATORS

1. Patient suspected of having myocardial infarction (MI)
2. All chest pain patients or any patient at risk for a MI
3. Consider atypical presentations:
   a) Elderly
   b) Female
   c) Diabetic
   d) Unexplained syncope
   e) Difficulty breathing
   f) General weakness in patients over 50 years old
   g) Profound weakness
4. May be considered in patients with stable tachycardia for diagnostic purposes.

CONTRAINDICATIONS (RELATIVE)

1. Uncooperative patient.
2. Presence of unstable ventricular tachycardia, ventricular fibrillation, or 3rd degree AV block.
3. Life-threatening conditions.
4. Situations in which a delay to obtain ECG (greater than one minute) would compromise care of the patient.

PROCEDURE

1. Complete initial assessment and stabilizing treatment **(DO NOT DELAY TREATMENT FOR 12 LEAD)**
2. May acquire 12 Lead at incident location or in vehicle just prior to beginning transport.
3. Place precordial lead electrodes and acquire tracing as per manufacturer's directions.
4. Relay ECG interpretation to base hospital. Assure that receiving hospital is advised if machine interpretation is "acute myocardial infarction suspected".
5. If defibrillation or synchronized cardioversion are necessary, place paddles or defibrillation electrodes, removing precordial leads if necessary.

DOCUMENTATION

1. Document the performance of 12 Lead ECG, the machine interpretation and the Paramedic interpretation on pre-hospital care report (PCR).
2. Provide original tracing to receiving hospital. Attach copy of 12 Lead to Base copy, provider copy and EMS copy of PCR.

SPECIAL CONSIDERATIONS

1. Approximate time to acquire 12 Lead should be no longer than (3) three minutes.
2. Do ECG prior to or just as Nitroglycerin is administered as changes in ECG may occur with treatment.
3. Do not need to repeat 12 Lead performed at clinics or other similar settings unless patient's condition changes.
4. Machine interpretation of suspected STEMI may not be accurate in presence of paced rhythms, bundle branch blocks, and certain tachydysrhythmias (*e.g.,* SVT, atrial flutter). When communicating machine interpretation to base hospital, paramedics should advise base of paced / BBB / tachydysrhythmia rhythms.

Approved:

SIGNATURE ON FILE

San Bernardino Co. Health Officer Date

SIGNATURE ON FILE

Inyo & Mono Co. Health Officer Date

SIGNATURE ON FILE

ICEMA Medical Director Date

SIGNATURE ON FILE

ICEMA Executive Director Date

12 LEAD ECG PROGRAM

PURPOSE

ALS Providers in the ICEMA Region are required to have a 12 Lead ECG program. This Policy outlines the requirements for ALS providers in regards to their 12 Lead ECG program.

ALS Providers must submit a 12 Lead ECG training program and a Quality Improvement plan to ICEMA for approval at least thirty (30) days prior to implementation.

1. TRAINING PROGRAM CURRICULUM

Paramedics authorized to perform 12 Lead ECGs must complete, at a minimum, a six (6) hour competence based training program. The curriculum must include all of the following:

a) Anatomy
b) Basic electrophysiology
c) Introduction to vectors and axis
d) Leads and lead placement
e) ECG boxes, sizes, and temporal relationships
f) Waves, complexes, intervals, and segments
g) Rate analysis
h) Rhythm interpretation
i) ST segments
j) ST elevation "imposters"
k) Acute MI and acute coronary syndrome
l) Bundle branch blocks
m) Case studies
n) Technical and protocol considerations
o) Demonstrate the ability to correctly identify and interpret ECGs

2. QUALITY IMPROVEMENT PLAN

2.1 DATA COLLECTION

Data must be collected on each 12-lead ECG performed. The data collected must include at a minimum:

a) Copy of the 12 Lead ECG
b) Date and time of the call
c) Hospital Destination
d) ST Elevation (yes/no)
e) Interpretation of the ECG as read by the paramedic
f) Interpretation of the ECG as read by the machine

2.2 DATA REPORTING

The provider agency will submit quarterly reports to ICEMA to include at a minimum:

a) Total number of 12 Lead ECGs performed during the quarter
b) Patient care record number for each performed ECG
c) Number ECGs interpreted as STEMI by machine
d) Copies of all STEMI ECGs to ICEMA

The receiving facility will assist the EMS Agency in obtaining outcome data for the purpose of CQI review. This data will be kept confidential in accordance to patient privacy laws and will only be used for purpose of system quality monitoring and education. The outcome data should include all of the following:

a) Patient outcome (lived/died/transferred)
b) Type of intervention if applicable (fibrinolysis/angioplasty)
c) Door-to-intervention time

Approved:

SIGNATURE ON FILE

San Bernardino Co. Health Officer Date

SIGNATURE ON FILE

Inyo & Mono Co. Health Officer Date

SIGNATURE ON FILE

ICEMA Medical Director Date

SIGNATURE ON FILE

ICEMA Executive Director Date